a linear imaging subsystem for producing a series of linear high-resolution 2-D images of said moving 3-D object surface as said 3-D object surface moves past said system,

wherein each said linear high-resolution ~~3-D~~ <u>2-D</u> image comprises a set of pixel intensity values, and each said pixel intensity value being assigned a set of two-dimensional coordinates specifying the location of the pixel in said linear high-resolution 2-D image; and

an image processing computer for constructing high-resolution 3-D images of said 3-D object surface using said linear 3-D surface profile maps and said high-resolution 2-D linear images of said moving object surface.

Claim 670 (currently amended): The system of claim 669, wherein said image processing computer further comprises:

(i) means for producing a 3-D surface geometry model of said moving 3-D object surface using said linear 3-D surface profile maps,

(ii) means for mathematically projecting pixel rays from each pixel in each said captured linear high-resolution 2-D image,

(iii) means for computing the x, y, z coordinates associated with the points of intersection between these pixel rays and said 3-D surface geometry model, and

(iv) means for generating a linear high-resolution 3-D image of said moving 3-D object surface based on said computed points of intersection,

whereby each pixel in said high-resolution linear 3-D image comprises an intensity value I(x, y, z) and a set of x,y,z coordinate values specifying the location of the sampled point of said moving 3-D object surface; and

(v) <u>means for</u> assembling, in an image buffer, a set of consecutively ~~computed~~ <u>generated</u> linear high-resolution 3-D images so as to construct an area-type high-resolution 3-D image of said moving 3-D object surface.

Claim 671 (currently amended): The system of claim 670, wherein said image processing computer further comprises:

(vi) at ~~the~~ <u>said</u> image processing computer, mapping the intensity value I(x', y', z') of each pixel in said ~~computed~~ <u>generated</u> area-type 3-D image onto the x',y',z' coordinates of

points on a uniformly-spaced grid surface positioned along the optical axis of said linear imaging subsystem so as to model a 2-D planar substrate on which graphical forms of intelligence on said 3-D object surface might have been originally rendered; and

(vii) using an intensity weighing function based on the x', y', z' coordinate values of each pixel in said area-type high-resolution 3-D image, so as to produce an area-type high-resolution 2-D image of said 2-D planar substrate surface bearing said forms of graphical intelligence.

Claim 672 (currently amended): The system of claim 671, which further comprises:

(viii) at ~~the~~ said image processing computer, using ~~said~~ an OCR algorithm to perform automated recognition of graphical forms of intelligence that might be possibly contained in said area-type high-resolution 2-D image of said 2-D planar substrate surface so as to recognize said graphical forms of intelligence and generate symbolic knowledge structures representative thereof.

Claim 673 (currently amended): A method of producing high-resolution 3-D images of moving 3-D object surfaces of arbitrary surface geometry ~~moving relative to said system~~, said method comprising the steps of:

(a) profiling a 3-D object surface of arbitrary surface geometry moving past an object profiling subsystem, and producing a series of linear 3-D surface profile maps of said moving 3-D object surface as said 3-D object surface moves past said subsystem,

wherein each said linear 3-D surface profile map comprises a set of 3-D coordinates specifying the location of sampled points along said moving 3-D object surface;

(b) producing a series of linear high-resolution 2-D images of said moving 3-D object surface as said 3-D object surface moves past a linear imaging subsystem,

wherein each said linear high-resolution ~~3-D~~ 2-D image comprises a set of pixel intensity values, and each said pixel intensity value being assigned a set of two-dimensional coordinates specifying the location of the pixel in said linear high-resolution 2-D image; and

(c) constructing a high-resolution 3-D ~~images~~ image of said 3-D object surface using said linear 3-D surface profile maps and said high-resolution 2-D linear images of said moving object surface.

Claim 674 (currently amended): The method of claim 673, wherein step (c) further comprises:

(c1) producing a 3-D surface geometry model of said moving 3-D object surface using said linear 3-D surface profile maps,

(c2) means for mathematically projecting pixel rays from each pixel in each said captured linear high-resolution 2-D image,

(c3) means for computing the x, y, z coordinates associated with the points of intersection between these pixel rays and said 3-D surface geometry model, and

(c4) means for generating a linear high-resolution 3-D image of said moving 3-D object surface based on said computed points of intersection,

whereby each pixel in said high-resolution linear 3-D image comprises an intensity value I(x, y, z) and a set of x,y,z coordinate values specifying the location of the sampled point of said moving 3-D object surface; and

(c5) means for assembling, in an image buffer, a set of consecutively computed linear high-resolution 3-D images so as to construct an area-type high-resolution 3-D image of said moving 3-D object surface.

Claim 675 (currently amended): The method of claim 674, which further comprises:

(d) at ~~the~~ said image processing computer, mapping the intensity value I(x', y', z') of each pixel in said computed area-type 3-D image onto the x',y',z' coordinates of points on a uniformly-spaced grid surface positioned along to the optical axis of said linear imaging subsystem so as to model a 2-D planar substrate on which graphical forms of intelligence on said 3-D object surface might have been originally rendered; and

(e) using an intensity weighing function based on the x', y', z' coordinate values of each pixel in said area-type high-resolution 3-D image, so as to produce an area-type high-resolution 2-D image of said 2-D planar substrate surface bearing said forms of graphical intelligence.

Claim 676 (currently amended): The method of claim 675, which further comprises:

(f) at ~~the~~ said image processing computer, using said OCR algorithm to perform automated recognition of graphical forms of intelligence that might be possibly contained in said area-type high-resolution 2-D image of said 2-D planar substrate surface so as to recognize said graphical forms of intelligence and generate symbolic knowledge structures representative thereof.

Claim 677 (previously presented): A method of recognizing graphical intelligence recorded on planar substrates that have been physically distorted as a result of either (i) application of the graphical intelligence to an arbitrary 3-D object surface, or (ii) deformation of a 3-D object on which the graphical intelligence has been rendered.

Claim 678 (currently amended): The method of claim 677, which is capable of ~~"undistorting"~~ undistorting any distortions imparted to the graphical intelligence while being carried by the arbitrary 3-D object surface due ~~to, for example,~~ to non-planar surface characteristics.

Claim 679 (previously presented): A method of recognizing graphical intelligence, originally formatted for application onto planar surfaces, but applied to non-planar surfaces or otherwise to substrates having surface characteristics which differ from the surface characteristics for which the graphical intelligence was originally designed without spatial distortion.